What is claimed is:

1. A method for satellite communications, comprising:

measuring a satellite drift in the north/south direction at an earth station;

generating a history of the measured drift over a period of time; and

generating flywheel timing values based on delay values predicted according to the measured satellite drift history over a predetermined time.

2. A method as claimed in claim 1, wherein the predetermined period of time is one sidereal day.

3. A method as claimed in claim 1, wherein the generated flywheel timing values are used in a time division multiple access (TDMA) satellite communications system.

4. A method as claimed in claim 1, further comprising continuously generating, based on the generated flywheel timing values, at least one of receive and transmit TDMA timings at a traffic terminal, receive TDMA timing at a reference terminal, and TDMA timing when a receive reference burst is lost.

5. A method as claimed in claim 1, wherein the generating comprises predicting delay values used for at least one of transmit timing, receive timing, and reference pulse timing.

6. A method as claimed in claim 5, wherein the earth station is one of a traffic terminal and a reference terminal.

7. A method as claimed in claim 1, wherein the flywheel timing values, for a TDMA satellite communications system having a traffic terminal and a reference terminal, are generated by calculating a number of symbols with respect to reference pulse timing of the traffic terminal.

8. A method as claimed in claim 7, further comprising, during normal operation, the reference terminal transmitting correction information to the traffic terminal.

9. A method as claimed in claim 8, wherein the correction information comprises a reference burst used by the traffic terminal to derive a receive timing.

10. A method as claimed in claim 8, further comprising synchronizing the transmitting by measuring timing offset of a traffic burst at the reference terminal, and adjusting a burst transmit timing at the traffic terminal.

11. A method as claimed in claim 4, wherein the continuous generating of TDMA timing comprises generating control frame timing based on a calculated start of receive control frame delay value and a calculated start of transmit control frame delay value.

12. A method as claimed in claim 11, wherein the delay values are compensated according to at least one of a range change and a drift of a traffic terminal clock with respect to a reference terminal clock.

13. A flywheel timing generation method, comprising:

generating a reference pulse stream with a period of one control frame;

measuring and recording a plurality of receive time delay and transmit time delay values for a satellite communication signal over a predetermined period of time;

designating, for every control frame interval, start of receive frame delay and start of transmit frame delay values based on the control frame period and based on the recorded time delay values, referenced to a designated time;

from a designated value for receive frame delay, generating a flywheel receive start timing by counting a calculated number of symbols from a corresponding designated reference pulse;

from a designated value for start of transmit frame delay, generating a flywheel transmit start timing by counting a calculated number of symbols from a corresponding designated reference pulse.

14. A method for satellite communications, comprising:

measuring and recording a plurality of timing delay values at an earth station for a period of time; and

generating flywheel timing values by calculating a satellite range change based on the recorded delay values, the range change predicted to compensate a satellite drift in the north/south direction over a predetermined time.

15. A method as claimed in claim 14, wherein the predetermined period of time is one sidereal day.

16. A method as claimed in claim 14, wherein the generated flywheel timing values are used in a time division multiple access (TDMA) satellite communications system.

17. A method as claimed in claim 14, further comprising continuously generating, based on the generated flywheel timing values, at least one of receive and transmit TDMA timings at a traffic terminal, receive TDMA timing at a reference terminal, and TDMA timing when a receive reference burst is lost.

18. A method as claimed in claim 14, wherein the generating comprises predicting delay values used for at least one of transmit timing, receive timing, and reference pulse timing.

19. A computer system used for satellite communications, comprising:

a processor; and

a memory including software instructions adapted to enable the computer system to perform the steps of:

generating a reference pulse stream with a period of one control frame;

measuring and recording a plurality of receive time delay and transmit time delay values for a satellite communication signal over a predetermined period of time;

designating, for every control frame interval, start of receive frame delay and start of transmit frame delay values based on the control frame period and based on the recorded time delay values, referenced to a designated time;

from a designated value for receive frame delay, generating a flywheel receive start timing by counting a calculated number of symbols from a corresponding designated reference pulse;

from a designated value for start of transmit frame delay, generating a flywheel transmit start timing by counting a calculated number of symbols from a corresponding designated reference pulse.

20. A computer system used for satellite communications, comprising:

a processor; and

means for generating flywheel timing values considering the daily inclination change due to a satellite drift in the north / south direction.

21. A computer system used for satellite communications, comprising:

a processor; and

means for generating flywheel timing values considering a daily delay value change for received and transmitted signals due to satellite drift in the north / south direction.

22. A computer system as claimed in claim 21, wherein said daily delay value is computed as a function of a maximum time difference due to the satellite drift in one sidereal day.

23. A circuit for flywheel operation in a satellite communications system, comprising:

a first counter operative to measure a receive delay time during a normal operation, the first counter operative to receive a predicted receive delay value and generate a flywheel receive control timing during flywheeling operation;

a second counter operative to measure a transmit delay time during a normal operation, the second counter operative to receive a predicted transmit delay value and generate a flywheel transmit control timing during flywheeling operation;

a first latch operative to record the measured receive delay time; and

a second latch operative to record the measured transmit delay time.

24. A circuit as claimed in claim 22, further comprising a symbol clock operative to generate a reference pulse stream.

25. A satellite communications system having a satellite, at least one reference terminal, and a plurality of traffic terminals in communication with the reference terminal for transferring timing correction information between the terminals, the system comprising:

a timing correction signal generator in the satellite for transmitting the timing correction information to the reference terminal; and

a flywheel timing generator operative to generate flywheel timing signals when the timing correction information transmitted by the satellite is not available to the reference terminal,

wherein the flywheel timing generator generates the flywheel timing signals based on at least one of a daily inclination change due to a satellite drift in the north / south direction and a daily delay value change for received and transmitted signals due to satellite drift in the north / south direction.